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# Draining Clay Land.

A NEW METHOD  
OF DOING IT.

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....BY....  
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# DRAINING CLAY LAND

Is absolutely necessary to obtain an average crop in an ordinary year.

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THIS HAS BEEN NEGLECTED SINCE  
HARVESTING MACHINERY HAS  
BEEN INTRODUCED.

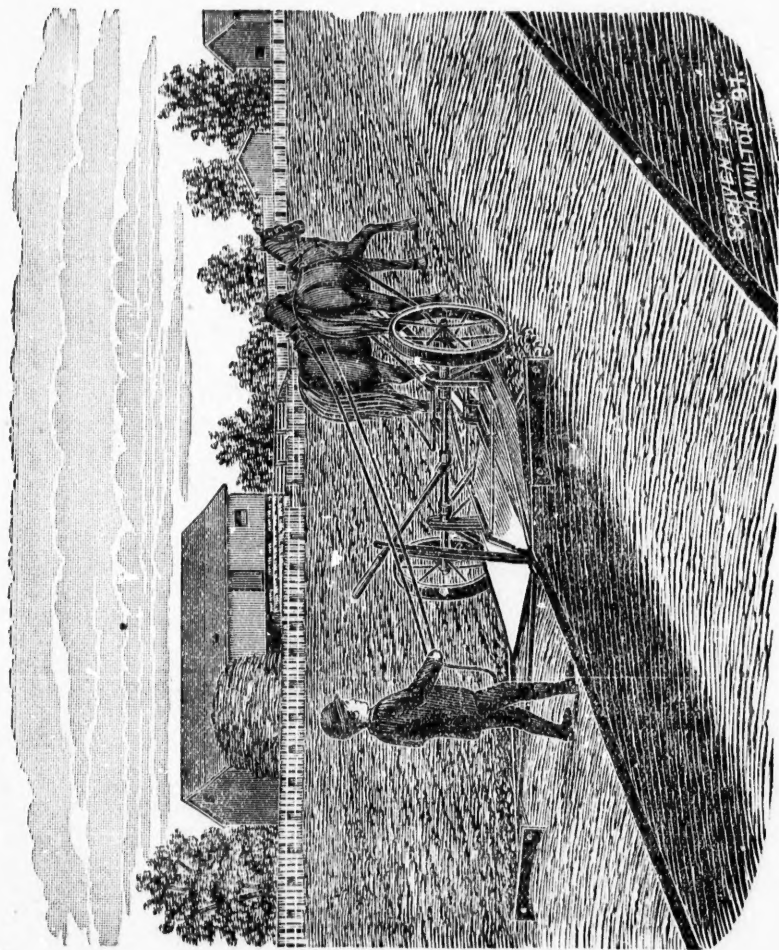
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## A NEW IMPLEMENT INVENTED

To do this important work at reasonable expense.

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**EXPLANATION OF THE SYSTEM.**



## A PLEA FOR THE BETTER DRAINAGE OF OUR CLAY LAND.

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MY FELLOW FARMERS: My experience in farming within the last few years has convinced me that we must have a better system of draining our clay lands, or very soon we will fail to make even a bare living out of them. Our forefathers were accustomed to plough narrow lands, and to put a good deep plough furrow between them, but the advent of mowers and binders has caused us to dread those water furrows, so the tendency of late years has been to plough the lands wider and wider, and to make the water furrows shallower and yet shallower still, until, practically, there is no drainage of the soil at all. Indeed, many of our farmers seem to think that if there is no pools of water standing on the surface, that is all the drainage required. There can hardly be a more serious mistake than this made by the occupant of any clay farm.

The mere statement of this fact ought to be sufficient to convince any farmer. It seems that every one of them ought to know that there is not a single crop we raise that will ever come to perfection with its roots standing in water. Now, my friend, if you really have any doubts on this point, let me point out to you a method by which you may convince yourself on this, to you, all important point.



You take a watertight box, or barrel or kettle, of any size or shape ; fill it with any kind of earth that suits you ; sow in that earth, at the proper season, any kind of seed, such as you grow on your farm ; then fill your vessel to within two inches of the surface of the earth, with water. Now bore a few holes just at your waterline around the vessel, to make sure the water does not rise any higher. If the rains should fail to keep the water up to the mark, you fill it up again. Now do you think you would ever raise one grain of wheat, or barley, or oats, or one head of clover ; or a turnip or mangold, or carrot, or any other article of farm produce whatever ? If you do, try it, and I will give you my farm for the first head of grain, or the first potato, or any other root you will ever raise, under such circumstances. But I think that if you will but consider the matter, you will be convinced that it is not necessary to try the experiment ; you will see that the proposition is absurd. Yet, my friend, if you argue that the drainage of the surface is all the drainage necessary, you are practicing this very same absurdity.

But, you say, we do raise a little of something every year, and sometimes we get a good crop. Yes, my friend, but no thanks to your good management, for these good years. It was only because the rainfall did not happen to keep your box or kettle up to your waterscape mark that you had anything at all. Did it never occur to you, my friend, to make your waterscape lower down, in the side of your box, so as to leave you at all times at least 12 inches of drained soil, in which the roots of your crops would be per-

fectly safe. Yes, I have thought of it. But my box being nearly on a level with the ground around it, I don't see how I am to drain it, without putting in a tile drain, and you know that takes time and money which I cannot afford. Well, my friend, my object in writing this is to show you just how to do it, without extra loss of time and with but little money.

But before I proceed to explain my method of doing this I want you to accompany me over a review of the last two seasons, the years of 1896 and 1897, that I may impress upon your mind the actual facts as regards this matter of drainage, without any parable whatever. I take those years because they are two extreme years—the former extremely bad, the latter unusually good, and because they will be easily remembered by all. Let us see what they teach us on this question. You will remember that about the end of December, 1895, we had an unusual amount of rain, in the midst of which it turned cold, and froze up hard. The snow came soon afterwards, and covered up the ground, and in this condition it remained all winter. The wheat having looked well in the fall we were much surprised to find it quite dead in the spring when the snow went off. The clover suffered in a similar manner. Now, what was the cause of this, my friend? I really don't know, you say, unless it was the will of Providence to keep us on short fare for that year. Then you think that the fact that all the land composed of sandy soil had good crops, and all the clay soil had no crops at all for that year, were caused by a special decree of Providence, do you!

Now, I do not deny that we are entirely dependent on the Divine Being for all the products of the earth, and try as we will, we can never free ourselves from such dependence. But, at the same time, we should be careful not to "charge God foolishly." I cannot agree with you that in this instance the Almighty ever, ever made any such decree. But I think I can give you a much more reasonable explanation of our loss on that occasion.

Our clay soils were full of water when the frost came. The roots of the wheat and clover consequently stood in a solid block of ice all winter, and being thus shut off from air, perished. On the sandy soils surplus water is never retained. It goes down through it as easy as water goes through a seive, consequently their wheat was not hurt at all. Our soil along this Twenty Mile Creek being a mixture of clay and sand, we had about a half crop. Thus you see, my friend, our loss was in exact proportion to the amount of water in the soil. Sandy soil holds no water—a full crop; sandy loam soil—a half crop; clay soil full of water—no crop at all. This, however, may be regarded as a rather exceptional occurrence. It may happen again at any time; it may not in many years. What we know does happen much more frequently is what is known as winter killing, or freezing out. Six years out of seven our clay lands suffer to a greater or less extent from this cause. Our clay soils being usually full of water in the spring, the alternate freezing and thawing throws the wheat and clover out, root and branch, to perish on the surface. Hence we see that



all these losses are from one and the same cause—surplus water in the soil. We cannot control the frost, or the rainfall ; but we can control the amount of water in the soil, and if we refuse or neglect to do this in the future let us not ascribe our losses to Providence, but rather to our own improvidence.

Now, with regard to our last crop of 1897, we learn this : There comes, perhaps, one year in seven when it matters little what we do or don't do. We get a good crop anyway. This it is that seems to encourage thoughtless and careless farmers in their evil courses, and for this cause such exceptional years are not an unmixed blessing. But you will notice that even in this exceptional year our spring crops were only about the half of what they might have been had there been better drainage. They suffered badly during the latter part of July and beginning of August from excess of water in the soil. Indeed, my friend, if you will but take the trouble to think and take notice of those things, you will be convinced, as I am, that our losses from this cause will average the half of our entire crops. But you will say: How was it that our fathers had good success almost every year on these same farms ; how do you account for that ? I have shown you that you do not drain your land even as well as your fathers did. Their attempts at it were but crude for the want of better implements to drain with ; but yours are far worse. You might do better than you do, even with such tools as you have. I beg also to remind you that when the land was new it was more porous and did not retain the water it does now. Again, the

destruction of your clover by freezing out year after year has so impoverished your land that it has not the strength to withstand contrary influences that it once had.

The loss of a crop of wheat is serious enough, but when an intelligent farmer goes over his meadows in the spring and finds almost the whole crop lying dead on the surface, he knows he has sustained a loss that will be almost impossible to retrieve. And when such a sight meets you in the future, my friend, your only comfort will be the reflection that it was all your own fault. With twelve inches of well-drained soil on the surface of all your fields, such a catastrophe would be impossible. This is now easily within your reach.

And now, if I have succeeded in convincing you of the absolute necessity of better drainage, and at last you see that it is utterly impossible for any crop you raise to do well with the roots standing in water, and every day they remain in such condition you are suffering loss and in danger of losing the entire crop. And remember there is no outlet for the greater part of this water but by evaporation. Our clay bottoms will hold it like a bottle, and will cause the soil to run together like a bed of mortar; then, when dried out by evaporation, leaves it as hard as brickbats. Then you begin to complain of your hard clay farms and wish you were on the sand. But take courage, my friend. I will shortly demonstrate to you that your clay farm, rightly managed, is worth any two sand farms.

I have shown you the loss you sustain by frost in connection with surplus water. I now refer you to the great benefit of this same frost to the soil, when it finds no surplus water to operate on. Therefore I would not have you regard it as an enemy. It is one of our very best friends. You will have noticed in the spring how it lays hold of those hard clay lumps and pulverizes them as nothing else can do, leaving them mellow as a bed of ashes, beautifully adapted for the reception of the seed in the Spring. And it would remain so if you would keep it well drained. Do this, and you will have no cause to complain of your "hard clay farms."

And now before entering into a description of my remedy for this state of things, permit me to say that in pondering over those matters for the last few years, I began to look around for a remedy, but I found that with all our boasted inventions, we were utterly destitute of any implements for the required purpose. I required an implement for raising the lands to any required height and for leveling off the surface, so that there shall be no hills or hollows in which the waters can settle—nothing to cut a water furrow between the lands, but a plough. Now a plough is a good thing to turn over the soil with, and for that purpose I don't think it will ever be superseded. But for the very necessary purpose above mentioned it is an absurdity; just fancy a man cutting a watercourse between two lands, and at the same time building a dam the whole length of it on one side to prevent the water getting into it. Yet that is the way we still do it in this enlightened age.

True there is perhaps one farmer in ten that can do some of the requisite things above mentioned with a plough, but these are our prize ploughmen. And even with them it is but a slow and laborious process. Therefore, I concluded it was high time to look out for something better adapted for the purpose. Consequently after about two years of experimenting and study, I have completed a machine for the purpose, called a Land Shaper. "It fills the bill admirably;" raises your land in the centre to any required height, levels it, cuts a narrow watercourse between the lands so there is no impediment in the way of mowers and binders, and carries the earth away to the top of the land; it does all this at one and the same time, besides assisting very materially in pulverising the soil; it consequently takes no more time to prepare your field for a crop with it than it would do without it. Any boy that can drive a team can put a field in much better shape with it than a first prize ploughman could do without it. If you wish to sow seed with a grain drill across the lands, you will by this means partially fill up the watercourse. To remedy this there is a small edition of the machine called a "Follower." With this machine you just run out your furrows again with one horse. It will pay you well also to run this small machine over your meadow and pasture land every fall to clean out and deepen your water furrows.

Now do not suppose that my chief object in this invention is personal gain. I have lived in an age of invention and have partaken of the benefit of others'

labor. Of late I have had a strong ambition to contribute something to the general stock of knowledge before the time comes for my final departure from this world. I have succeeded. I feel sure those machines will live and bless every occupant of all clay farms as long as time shall last.

I beg here to reply to a possible objection, says some. I fear there would be difficulty in running our mowers and binders over lands raised so high, and water furrows as deep as you propose to have them. I reply: I have had one year's experience of the system and find no difficulty whatever. Any little inconvenience there may be is more than compensated by the leveling of the surface and the absence of water furrows made by a plough. Beside we cannot afford to be guided in such matters by mere likes and dislikes. The question is rather, can you afford to have one-half of all your crops destroyed from lack of proper drainage now that such drainage is placed within your reach? If you persist in having a farm without this high culture, there is two ways of getting it. The one way is to put in tile drains 12 feet apart, with cross drains wherever required. The other is to move onto a sandy farm. In either case you may farm successfully with the surface on a dead level, but if you cannot do either of these the only sensible thing you can do is to take the high culture.

And now to all farmers whom God has endowed with mental faculties, so that they "know a good thing when they see it." Come along and investigate this matter for yourselves. I can show you the



machines, also specimens of the work they do. That will, I think, convince you.

To all who are destitute of such endowment just stay where you are. Don't trouble yourselves in the least. I know that for you to "think" is a very dreadful process. Many of you would rather work hard with hands and feet a month, than you would think for one hour. You are more to be pitied than blamed for this. I find, too, you have a very ancient ancestry, for I find this recorded in the oldest of all books, "My people are destroyed for lack of knowledge," and again, "My people doth not consider." I presume the All Father said these things more in reference to spiritual than to temporal things. But they are equally true in the one case as the other.

I think, however, that in one respect you are more to be blamed than your ancestors. In order that your mental faculties shall trouble you as little as possible, many of you becloud, stunt and stupify these faculties by the use of tobacco. This your fore-fathers did not do.

To all such I say again, don't trouble yourselves; wait until your more progressive neighbors bring those machines into your immediate neighborhood, when you will be able to compare results. But I warn you that by taking this course you will lose the price of the machines many times over by diminished crops.

Furthermore, to all manufacturers of agricultural implements, I beg to say: If I were 25 years younger I would desire no better business than the

manufacture of those machines, but having already lived to near the limit of human life, if I am to get any personal benefit at all for my invention in this world it must be very soon. Consequently I am open for sale of my rights in those machines, both in Canada and the United States. Letters patent have been secured from both Governments. In the meantime I will take orders from farmers for machines to be delivered next spring. Seventy-five dollars will buy the two machines, to be paid for next fall. Inasmuch as those machines do their work very quickly, two or more farmers might club together, which would make the expense very light.

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